



Kingsville Astronomical Society (KAS)

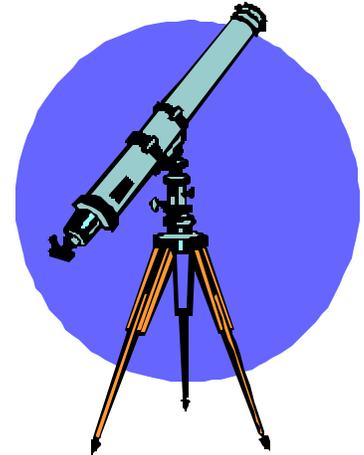
In South
Texas' Dark
Skies

The K.A.S. Observer

P.O. Box 5918, Kingsville, TX 78364-5918

December, 2002—Vol. 1, No. 12

www.geocities.com/kingsville_astronomical_society



November Meeting

Thursday, Nov. 21, 7:30 p.m.

TAMU-K Hill Hall, Room 119

(There is no meeting in December due to Christmas.)

NOVEMBER MEETING PROGRAM -

Amateur Observing for December ... The Season of Pegasus, Pisces, and Andromeda ...

Presented by Cynthia Gustava

Rescheduled from October 24th, this program will focus on the best objects to be viewed in the constellations of Pegasus, Pisces and Andromeda. You will be introduced to a variety of objects such as red supergiant stars, stars with orbiting planets, spiral galaxies, an unusual grouping of five galaxies called Stephan's Quintet, supernovae, planetary nebulae and black holes. Also see mythological figures surrounding Pegasus and Andromeda as depicted on ancient coins dating from as far back as the 4th century B.C.

Christmas Gift Ideas for the Budding Astronomer ... *Presented by Jason Fry*

Deep South Texas Stargaze

by Jason Fry, President

We plan to hold our **first ever** regional observing event called "The Deep South Texas Stargaze" on January 30-February 2, 2003, at Escondido Ranch. I've already done a little bit of informal communicating with some folks in San Antonio, Austin, and Dallas, and there's a great deal of interest from those areas. We will create some fliers to send to the clubs in San Antonio, Austin, New Braunfels/San Marcos, Dallas/Fort Worth, the four clubs in Houston, as well as Laredo and Corpus Christi. We will have a link from our website with info and a printable registration form in PDF format for you to print and send by mail with your registration payment and housing deposit. We will also include a map to the location.

This event will feature Texas speakers on subjects such as CCD imaging and processing, planetary nebulae, and deep sky observing. We hope this will become an annual event that observers from near and far will want to attend! Don't miss it!

See Jason's article on page 6 and mark your calendars for January 30, 2003!

What's Up? In December

- 1 Sun**—Waning crescent Moon forms a triangle with Venus and Mars in the dawn, with Spica off to their upper right.
- 4 Wed**—New Moon and Venus is at its brightest at magnitude -4.7 . Jupiter begins retrograde motion which takes it back towards the Beehive Cluster.
- 5 Thur**—Moon is 0.64 degrees NNW of Mercury (about 11 degrees from the Sun!)
- 6 Fri**—Venus and Mars are 1.6 degrees apart before dawn. Venus shows its greatest illuminated extent.
- 11 Wed**—First quarter Moon.
- 12 Thur**—Geminid Meteors are best seen after moonset on the nights of Dec 12-13 and 13-14. It's predicted that we may see meteors about once a minute, on average. This shower is just past first quarter moon, which sets early enough to allow many hours of good meteor observation.
- 13 Fri**—*St. Lucy's Day (see below)*, formerly regarded as the middle of winter.
- 17 Tue**—Saturn reaches opposition. This is the middle of the best time of year to see it. It is on the meridian at midnight and now moves from the morning into the evening sky.
- 18 Wed**—Moon comes to within 3 degrees of Saturn during the night.
- 19 Thur**—Full Moon and the shadow of Jupiter's satellite Europa falls directly on Io.
- 21 Sat**—The Sun reaches December solstice at 7:14 CST marking the start of winter in the Northern Hemisphere.
- 22 Sun**—Waning gibbous Moon goes from 7 degrees down to 4 degrees from Jupiter on the night of the 22nd and into the morning of the 23rd.
- 24 Tue**—Christmas Eve
- 25 Wed**—*Merry Christmas to all!*
- 26 Thur**—Last quarter Moon
- 30 Mon**—The Moon forms a morning triangle 3 degrees to 5 degrees per side with Venus and Mars.
- 31 Tue**—New Year's Eve

Planets for the month of December:

- **Saturn** is up all night long this month ... low in the east in early evening and higher later in the night. This planet attains a peak brightness of magnitude -0.5 this month and is the showpiece of the solar system, putting on its greatest show in a third of a century.
- **Jupiter** rises several hours after sunset and rivals Saturn in a telescope because it's larger.
- **Mercury** is visible very low in the SW during twilight for most of the month.
- **Venus** is now our "morning star" in the SE before and during dawn all month long.
- Find **Mars** faint and just to the right of Venus. From the 2nd until the 12th, Venus and Mars are less than two degrees apart.

KAS Elected and Volunteer Positions:

President: Jason Fry
Vice-President: Charles Allison
Secretary: Milton Clasen
Treasurer: Danielle Bowden
ALCOR Contact:
 Jason Fry—E-mail: jason_fry@interconnect.net
Newsletter Editor:
 Cynthia Gustava—Email: cynm31@ev1.net
Webmaster:
 Charles Allison—Email: charles@atcweb.com
KAS Website:
http://www.geocities.com/kingsville_astronomical_society/
Astronomical League Website:
<http://www.astroleague.org/al/general/society.html#Texas>

Regular Member—\$20.00
Household Member—\$15.00
Junior Member—\$15.00
Junior Household Member—\$5.00
Club Discount Subscription to Astronomy Magazine (optional) - \$29.00
Club Discount Subscription to Sky & Telescope Magazine (optional) - \$30.00

IMPORTANT NOTE TO ALL MEMBERS:

If you haven't yet paid your dues for the new year, your membership will lapse after this newsletter, so be sure to pay your dues (with optional magazine subscriptions) at our meeting on November 21 ... don't miss out on all the exciting upcoming events and informative articles! You can also pay by mail to K.A.S., P.O. Box 5918, Kingsville, TX 78364-5918.

Lunar Eclipse: November 19

The full Moon will move through the wide outer edge of the Earth's shadow, causing a penumbral eclipse of the Moon. From 8:15 p.m. to 9:15 p.m. Eastern Time or 7:15 p.m. to 8:15 p.m. Central Time, the light of the Moon will be considerably shaded.

St. Lucy's Day, December 13, was formerly thought of as "the year's midnight" ... "Lucy light, shortest day, longest night" ... so says an old English phrase. In Sweden, the eldest daughter, wearing a white gown and wreath with four candles on her head, serves a sweet bun to everyone in the house and they sing a St. Lucy song.



Astronomers have finally con-
**Black Holes:
Feeling the Ripples**

firmed something they had long suspected: there *is* a super-massive black hole in the center of our Milky Way galaxy. The evidence? A star near the galactic center orbits something unseen at a top speed of 5000 km/s. Only a black hole 2 million times more massive than our Sun could cause the star to move so fast. (See the Oct. 17, 2002, issue of *Nature* for more information.)

Still, a key mystery remains. Where did the black hole come from? For that matter, where do *any* super-massive black holes come from? There is mounting evidence that such "monsters" lurk in the centers of most galaxies, yet their origin is unknown. Do they start out as tiny black holes that grow slowly, attracting material piecemeal from passing stars and clouds? Or are they born big, their mass increasing in large gulps when their host galaxy collides with another galaxy?

A new space telescope called LISA (short for "Laser Interferometer Space Antenna") aims to find out. Designed by scientists at NASA and the European Space Agency, LISA doesn't detect ordinary forms of electromagnetic radiation such as light or radio waves. It senses ripples in the fabric of space-time itself--gravitational waves.

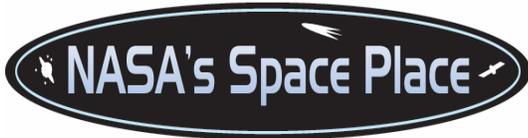
Albert Einstein first realized in 1916 that gravitational waves might exist. His equations of general relativity, which describe gravity, had solutions that reminded him of ripples on a pond. These "gravity ripples" travel at the speed of light and, ironically, do not interact much with matter. As a result, they can cross the cosmos quickly and intact.

Gravitational waves are created any time big masses spin, collide or explode. Matter crashing into a black hole, for example, would do it. So would two black holes colliding. If astronomers could monitor gravitational waves coming from a super-massive black hole, they could learn how it grows and evolves. Unfortunately, these waves are hard to measure. If a gravitational wave traveled from the black hole at the center of our galaxy and passed through your body, it would stretch and compress you by an amount far less than the width of an atom. LISA, however, will be able to detect such tiny compressions.

LISA consists of three spacecraft flying in formation--a giant triangle 5 million km on each side. One of the spacecraft will shoot laser beams at the other two. Those two will echo the laser signal right back. By comparing the echoes to the original signal, onboard instruments can sense changes in the size of the triangle as small as 0.000000002 meters (20 picometers).

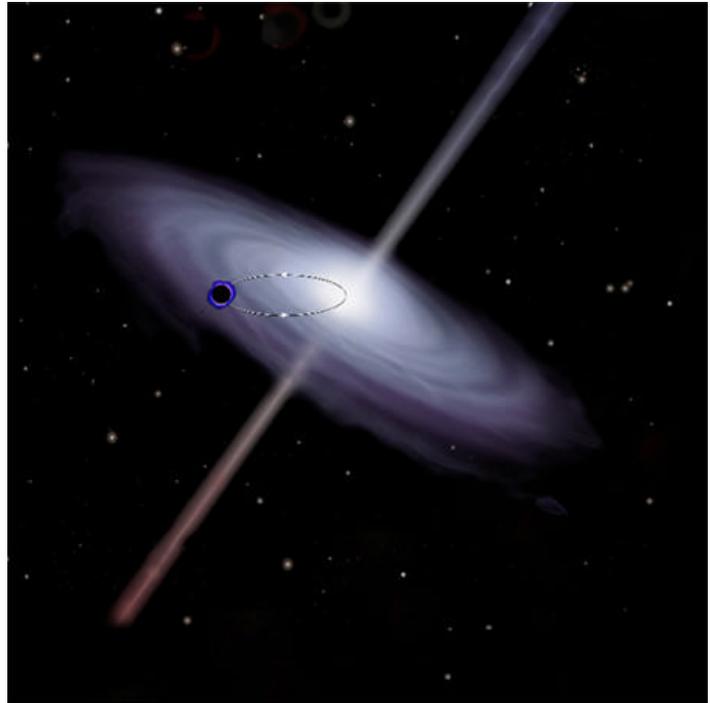
With such sensitivity, astronomers might detect gravitational waves from all kinds of cosmic sources. The first, however, will probably be the weightiest: super-massive black holes. Will "feeling" the ripples from such objects finally solve their mystery, or lead to more questions? Only time will tell. Scientists hope to launch the LISA mission in 2011.

(See image on page 4)



Black Holes: Feeling the Ripples

Story on page 3 ...



November 17 Leonid Meteor Shower

by Pat Allison

The Leonids are coming!! The Leonids are coming!! This is no earthly invasion, but the anxiously awaited return of a dramatic meteor shower. This year's Leonid meteor shower is expected to be so big it is being called a storm rather than just a shower.

So, when will this happen? The peak for the Kingsville viewing area is predicted to be around 4:00 a.m., November 19, but just like predicting the weather, the art of predicting the Leonids has a margin of error. In other words, get an early start and stay till dawn.

Okay, where are we supposed to look for these Leonids? The Leonids appear from a point in the constellation Leo, which is why they are called LEONids. This magic point is known as the radiant. Jupiter is also going to be hanging around near Leo. The action will start in the east along the horizon as Leo rises.

All these shooting stars are caused by the earth passing through the trail of the comet 55P/Tempel-Tuttle. As Tempel-Tuttle passes near the Sun, all sorts of dust particles and pebbles are blown off to form the tail of the comet. When the earth passes through the tail, some of these particles slam into the earth's atmosphere at amazing speeds, 40,000 to 260,000 km/hr, and burn up at heights of 90 to 100 km above the earth. This little collision gives us the wonderful light show lovingly called a meteor shower, or in this year's prediction, a meteor storm.

(Read more about the Leonid's on page 7 ...)

December 14 Geminid Meteor Shower

by Cynthia Gustava

The Geminid meteor shower is active from December 7th through the 17th. The ZHR (zenith hourly rate) will be variably around 120 and in fact, it won't be a bad year for Geminid observing, especially after the waxing gibbous Moon sets in the early midnight hours of December 13th-14th. This shower is one of the best presently visible from Earth and produces typically bright, medium-speed meteors near its maximum. For northerly watchers, the radiant, just north of the star Castor (Alpha Geminorum), is available almost all night after the early evening, but further south it rises only at local midnight.

The Geminids are unique in that this shower is associated with an Apollo asteroid, 3200 Phaethon. Geminid meteor particles are also far denser than those of other "cometary" meteor showers, suggesting they may be asteroidal fragments rather than more friable comet dust.

Especially favored locations are likely to be right across North America. Rates usually persist at only marginally reduced levels for about 6-10 hours across the peak and are worth seeing even if the maximum itself is missed. In addition, fainter telescopic Geminids are most numerous roughly a day before the visual ones, possibly from a triple radiant.

We just might see a few long-trained Geminid "earthgrazers" at the Andromeda Hour on St. Lucy's Day, December 13th.

Special Deep-Sky Profile

by Cynthia Gustava

A few years ago I ran across a short article on an asterism called “Kemble’s Cascade”. I then mentioned it to a few amateur astronomers at the George Observatory ... and no one had ever heard of it! I was intrigued at the fact that seasoned amateur astronomers had not heard of this wonderful little line of 9th and 10th magnitude stars in Camelopardalis, the Giraffe. That same night I searched for and found this marvelous asterism.

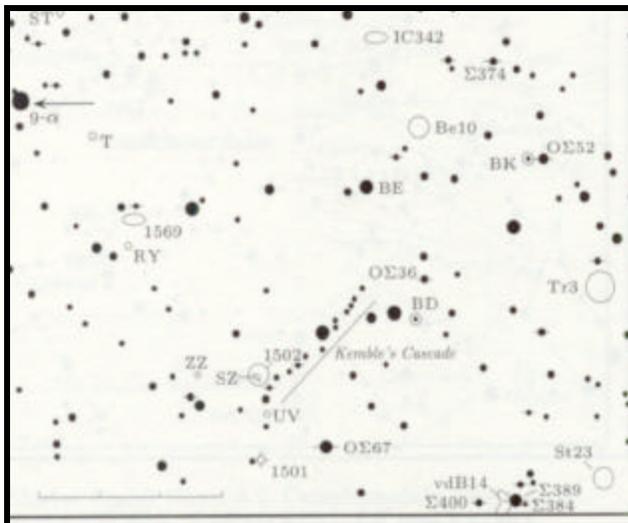
If you have done any observing in Camelopardalis, you already know that this is a very dim constellation. But it is a very interesting place to do deep-sky observing. For one thing, the Giraffe contains a number of variable, eruptive variable and ex-variable stars. Ex-variable? Quite right. RU Camelopardi is a former cepheid star which has apparently now ceased to pulsate! According to Robert Burnham, this is “a case which is unique in the annals of astrophysics”. Also in Camelopardalis is NGC 1502 ... a nice little compact cluster which shines at magnitude 5.7 and is known for its many double stars. Camelopardalis contains a planetary nebula (NGC 1501), many spiral galaxies (one of which is a member of the Local Group) and even a barred spiral (NGC 2523) of very unusual structure. NGC 2523 is worth a second look. Another galaxy in this constellation to take a second look at is NGC 2403, a large spiral of magnitude 8.4 ... bright enough for binoculars. This galaxy is the brightest galaxy in the north celestial hemisphere to NOT have a Messier number!

But getting back to Kemble’s Cascade, point a good pair of binoculars (or a rich-field telescope) on the open cluster NGC 1502 and notice the string of stars running northwest away from the cluster. The discovery of this asterism was made by a Canadian amateur astronomer by the name of Lucian J. Kemble. In 1980, Lucian wrote to Walter Scott Houston telling him how he had been sweeping the heavens with 7x35 binoculars and found “a beautiful rivulet of faint stars tumbling from the northwest down to the open cluster NGC 1502”. The first night he was able to check Kemble’s report, Houston says he was “shocked to see a celestial waterfall of stars in this pallid corner of Camelopardalis” and promptly named it after Mr. Kemble.

There’s between two and three dozen stars in this asterism, depending on how many you can count as being parts of multiple streams or strands here and there in the main flow of the Cascade. No matter how many you count, though, this asterism is a beautiful sight! One dim, naked-eye star in the northern end of the Cascade forms the end of a 2.5 degree-long arc of a number of naked-eye stars that run askew of the Cascade. Near the southern end of the Cascade, the star UV Camelopardalis varies semi-regularly between 7.5 and 8.1 in a period averaging 294 days.

All the stars of Kemble’s Cascade lie farther than 200 light years away. Dark skies and a moderately good pair of 7x or 10x binoculars are needed to fully appreciate this novelty!

Happy Hunting!



PRESIDENT'S CORNER

After all the rain we've had recently (that rained out our last club meeting, among other things), it's been nice to have some nice, clear weather the last week or so. I've been able to get out and do some observing, which has been enjoyable. You won't want to miss our next star party gathering, which will be Saturday, November 30 at 6:00 pm at the B-Bar-B Ranch Inn.

Another new opportunity for our club is that we've been asked to host a stargazing event in conjunction with the Wildlife Festival that is being held as a part of the kickoff for La Posada. The event will be held at Lacopeta Ranch (five miles west of Ben Bolt) on Friday, November 22 at 7:00 pm. We will have a couple of telescopes out there to do some observing and to give a basic orientation to the night sky and constellation tour. Another benefit to this development is the connection we've developed with the Texas A&M Extension Service that owns and operates this facility, because they have indicated their willingness to our using the ranch as a star party observing site on a regular basis. We intend to check it out at this event.

Plans continue to develop for our more major event, the **Deep South Texas Stargaze**, to be held at Escondido Ranch, January 30-February 2, 2003. We have had good interest shown by organizations in San Antonio and Austin and hopefully will in Houston, as well. Stay tuned for more info and plan now to attend!

Lastly, we still need at least one more person to subscribe to Sky & Telescope and two more to subscribe to Astronomy through the club plans before we can send off our subscriptions. Further, if you haven't yet paid your dues for the new year, your membership will lapse after this newsletter, so be sure to pay your dues with optional subscriptions at our meeting on November 21 or by mail.

Instead of buying a department store "junk" scope for that special someone this Christmas, plan to spend the same amount and get some really nice equipment. I will be giving a presentation at the November meeting on "Christmas Gift Ideas for the Budding Astronomer." I'll have some slides of scopes and other packages. You won't want to miss Cynthia's program on observing in Pegasus, Pisces and Andromeda either.

See you there!

Jason Fry
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jason_fry@interconnect.net



Deep South Texas Stargaze

***January 30-February 2, 2003
at Escondido Ranch***

**Regional Star Party attracting amateur astronomers and
enthusiasts from all across Texas! Join us for ...**

- Professional Speakers**
- Drawings**
- Workshops**
- Observing Programs**

(Continued from page 4...)

Tempel-Tuttle visits us about every 33 years, 33.17 according to the more detail-oriented observers. Tempel-Tuttle leaves a trail of dust and stuff behind it on each pass, like a 2-year-old running through the living room. This year we will actually pass through two trails, the 1767 trail and the 1833 trail. Europe gets to enjoy the older 1767 trail while we get to see the newer 1833 trail ... newer trail for the New World.

There are a bunch of other trails from this same Tempel-Tuttle comet out there, but we aren't going through them this go-around. Every November we get to see some of the Leonid meteors but the exciting times happen when we actually pass through the thick of one of the trails.

Well, how many meteors are expected? There are lots of different groups of heavy-duty science types predicting how many meteors and when: Asher-McNaught is predicting over 300 per 15-minute period of time during the peak time at 4:30 a.m.; Jenniskens is predicting 250 every 15 minutes; and Lyytinen-Van Flandem predicts a conservative rate of 150 every 15 minutes at around 5:00 a.m. See a chart at <http://aio.arc.nasa.gov/~leonid/> (Note on Universal Time (UT) – we are 6 hours earlier than universal time. So if it is 10:00 UT then it is 4:00 CST.)

The exciting Leonid meteor storms happen in the first couple years just after the Tempel-Tuttle passes. Tempel-Tuttle's most recent perihelion happened February 28, 1998. However, the exciting Leonid displays of 2000, 2001, and hopefully 2002 are Tempel-Tuttle trails generated long ago. Tempel-Tuttle isn't the brightest comet in the sky and was 8th-9th magnitude at its brightest on January 18, 1998. D.J. Asher, from the Armagh Observatory in the UK, has a very interesting write up entitled *Leonid Dust Trail Theories*, which you can access on the internet at <http://www.arm.ac.uk/leonid/dustexpl.html>. The charts in his write up make an excellent visual statement about why some years the Leonid's are dramatic and some years the Leonid's are a dud.

Folks started to get real interested in researching the Leonid's after the traumatizing, end-of-the-world display in 1833. The population on the East Coast of the U.S. in 1833 was pretty shook up and local newspapers published all sorts of wild stories trying to describe what caused the sky to be on fire. A fellow named Denison Olmsted theorized the meteors had originated from a cloud of particles in space and even observed that they radiated from a point in Leo.

Astronomers were undaunted and worked to refine prediction of the Leonid's in 1932 and 1933. The Leonid's were at their regular 10-15 meteors per hour in the 40's and 50's. Technology started to play a roll in the hunt for Leonid's when the Jodrell Bank Radio Observatory was the first station to detect Leonid's by using radar in 1946, observing rates of 24 per hour. But due to the weakness of the Leonid's in the late 40's and 50's even this new technology of radar couldn't pinpoint the radiant positions and radiant diameters. It wasn't until 1966 that the Leonid's put on another exciting show. Those who had the opportunity to see the Leonid's in 1966, like Willis Jarrel, Jr., were charged up for a lifetime by the experience and looked forward to the events we are enjoying now. Whatever you do, don't miss the Leonid's on November 18-19 of 2002. They won't be as exciting again until 2033. With all my gray hair I don't expect to get another earthly chance to view the Leonid's in 2033. We might have another shot at a Leonid storm in 2006, but that prediction is still pretty much theory.

Experts have given us some tips for viewing. Robert Roy Britt provided this list of 10 tips at http://www.space.com/spacewatch/leonids_tips_021107-1.html ...

1. **Practice.** Go out a few nights before November 18-19 and start looking for some Leonid's. Find the constellation Leo and enjoy Jupiter, too. We are going to suffer from some serious moonlight, but a dry run will help you counter the moon's intrusion.
2. **Scout out a good location** and maybe a backup location with a good eastern view.
3. **Avoid moonlight.** Pretty hard to do with a full moon. Try to block out the light of the moon with a tall building or hill. Even devising a kind of tunnel so you can block more moonlight will help. The deeper your tunnel, the better the moonlight protection.
4. **Find a dark spot.** If you are in a light-polluted city, you might want to pack a midnight picnic and head for the hinterlands to find a good, dark viewing location. If you stay home, turn off the porch light and house lights.
5. **Go out early.** Fancy scientific predictions are great but can be less than perfect. So get out well before 4:00 a.m. and let your eyes adjust to the dark.
6. **Take a wide view.** The radiant, where the meteors are coming from, is in Leo but the ones you see in Leo will tend to be shorter. The longer ones will be streaking far away from the radiant. "Earthgrazers" will happen in the late evening hours of November 18th and could also be exciting for folks with a really good eastern view.
7. **Lean back and enjoy.** This is a long show so get the lounge chairs out, snacks and beverages, and get comfortable for a long night of watching.
8. **Bring the right gear.** Folks in Yankee land will need cold weather blankets, coats and hot cocoa. We are more likely to need a case of mosquito spray.
9. **Count the meteors.** All you need to do is have a pencil and a tablet and a watch with an illuminated dial. Put a tick mark on your tablet every time you see a meteor over a 5-minute time period. Neatness doesn't matter...accuracy does. Then when the sun comes up, count your tick marks to see how many meteors you saw in different periods of time.
10. **Watch for fireballs.** Fireballs are the really big meteors and some are expected in this Leonid display. You can even hear crackling and sizzling if you don't have the distraction of a radio keeping you company.

You'll enjoy checking out the Leonid Flux Estimator at <http://aio.arc.nasa.gov/~leonid/estimator.html> ...